

REMARKS

[001] The Office Action cites the following art: the present application as Applicant Admitted Prior Art (hereinafter AAPA); U.S. Patent Number 4,965,719 to *Shoens et al* (hereinafter *Shoens*); U.S. Patent Number 5,742,792 to *Yanai et al* (hereinafter *Yanai*).

[002] Claims 1-30 are pending in the case. Claims 1, 12, 14, 21, 22, and 24 are independent claims. Claims 1-11 are rejected under 35 USC § 112. Claims 14, 15, 17-25, and 27-30 are rejected under 35 USC § 103(a) as unpatentable over the combination of AAPA and *Shoens*. Claims 16 and 26 are rejected under 35 USC § 103(a) as unpatentable over the combination of AAPA, *Shoens*, and *Yanai*. Claims 12 and 13 are is rejected under 35 USC § 103(a) as unpatentable over the combination of *Shoens* and *Yanai*.

[003] The Applicants submit the attached remarks and respectfully request that the rejections be withdrawn and that the Claims be allowed.

CLAIMS 1-11 REJECTED UNDER 35 USC § 112—SUPPORT FOR AMENDMENTS

[004] Claims 1-11 are rejected under 35 USC § 112 for lack of support in the specification. In the Office Action mailed, 16 December 2005, the Examiner pointed out inconsistencies in the use of the words “lock command” and “synchronous operation” in the claims. Applicants responded by amending the claims, according to the specification. Applicants submit that all amendments made were supported by the original meanings of the Claims as well as the specification. No new matter was added and the scope of the search did not change. However, the Examiner has rejected the amendments as introducing new matter and has declared that the amendments required new grounds for objections necessitating a final rejection. Applicants disagree.

[005] Specifically, Examiner finds no support in the Specification for the limitation from Claim 1 “that the synchronous operation must complete prior to writing data to the target volume.” Examiner states that the entire specification contains no support for this limitation.

[006] Applicants cite the following. *Burton* (published version of the present application) ¶18 states that the “synchronous operation may be a lock operation.” In this art, a lock operation on a drive, a region of a drive, a sector, or a file, is used to provide data integrity by preventing a second entity from reading from or writing to a locked resource while the same resource is written to by a first entity. That a synchronous operation may be a lock operation embraces this concept. For a lock operation to be useful, the lock operation must complete before writing of data is permitted.

[007] The Examiner’s argument contradicts this accepted definition of a lock operations. For the Examiner’s argument to make sense, the following sequence would have to make sense: 1) request a lock on the target drive, 2) write to the target drive, 3) obtain a lock on the target drive. Such a sequence of events is contradicted by the Specification and is an unfair misrepresentation of Applicants’ application. The application carefully refers to prospective writes from the source controller to the target controller. The application does not describe prospective writes to the target volume as is suggested by Examiner’s argument.

[008] As stated above, *Burton* ¶18 explains that a synchronous operation may comprise a lock operation. *Burton* ¶21 further supports the interpretation recited in Claim 1:

In certain embodiments, initiating a lock operation on a selected target volume region locks the selected region of the target volume, allowing write operations to be conducted on the selected region.

[009] Thus, the lock operation, locking the selected target volume region “allow[s] write operations to be conducted.” In this embodiment, no write operations may be conducted

without a successful lock operation. The Office Action Response cited specifically to ¶18 because the lock operation in computer science terms necessitates the completion of a lock prior to actual writing to the target volume. However, the Office Action states that “Applicant’s Specification in its entirety” fails to give support for the limitation of Claim 1. Clearly, ¶¶ 18 and 21 support the limitation of Claim 1.

[010] *Burton* ¶24 further explains that sending a lock command to a target drive causes a region of a target drive to be locked “allow[s] multiple write operations to be conducted on the locked region.” Again, the write operations are allowed by the lock. The lock must precede the write operation in time if one allows the other.

[011] *Burton* ¶26 explains that the sending of data is halted as a result of a lock command failing. This further supports the principle that the lock is requisite prior to the actual writing of data to the target volume. One aspect of the invention is to allow the transmission of data to the target volume prior to the actual granting of the lock on the target volume. However, Claim 1 and all parts of the specification teach that transmitted data cannot be written to the target volume without successfully locking a region on the target volume.

[012] *Burton* ¶¶67 and 69 further support the temporal sequencing of Claim 1:

¶67 If the operation such as a lock operation has been granted, the method proceeds to ~~the~~ conduct associated operations step 440. Otherwise, the method loops to the operation granted test 430. (quoted as amended in last Office Action Response).

¶69 ... The conduct associated operations step 440 performs operations associated with the granted operations For example, one or more write operations associated with a lock operation may be performed in conjunction with the conduct associated operations step 440...

[013] The Office Action states that the Examiner looked at ¶69 in particular and found no support for the requirement that the lock operation complete prior to the write command.

Read in isolation, ¶69 may be difficult to understand. However, in conjunction with Figure 4 and ¶67, the meaning is clear. The operation granted step 430 of Figure 4 must complete prior to executing step 440. The operation granted step is the lock command as explicitly stated in the quoted section of ¶67 above. Further, step 440 is the write operation as described in ¶69 quoted above. Figure 4 and ¶¶67 and 69 clearly show that the target controller will loop until the lock is granted and then execute the writes in step 440.

[014] Applicants appreciate the efforts of the Examiner; however, Applicants respectfully submit that the cited paragraphs in the specification along with the paragraphs further referenced by the Examiner in the Office Action explicitly teach an embodiment in which the write operation is not conducted until after the lock operation is granted. Applicants submit that the Specification supports the amendment to Claim 1 and that the §112 rejection is improper and request withdrawal of the §112 rejection of Claims 1-11.

[015] Applicants further submit that Original Claim 9 makes it clear that the transmission of data to the target volume should halt in response to the rejection of a lock command. As such, the original Claims support the limitation that the lock command is a prerequisite to the writing of data on the target volume and that the original search should have and did include the limitations recited in Claim 1 concerning the temporal sequence of lock commands and writing of data to the target volume. Thus, Applicants submit that a broader or different search was not necessitated by the amendments. Applicants request the withdrawal of the final rejection status and further consideration of the Claims as supported by the original specification.

REJECTION OF CLAIMS 14, 15, 17-25, AND 27-30 UNDER 35 USC § 103(a)

[016] On page 4, the Office Action dated 2 June 2006 states, “The combination of prior art applied to Claims 1-11 discloses the system performing this method.” However, the Office Action cites no prior art against Claims 1-11. Even so, Applicants submit that none of the prior art of record teach or disclose each of the elements of Claims 1-11. Applicants assume that only the §112 rejection applies to Claims 1-11.

[017] Claims 14-15, 17-25, and 27-30 are rejected under 35 USC § 103(a) as unpatentable over the combination of *AAPA* and *Shoens*.

[018] Applicants renew the arguments raised in the March 15, 2006 Office Action Response. Examiner states that these arguments are not persuasive. Specifically, the paragraph at the top of page 19 of the 2 June 2006 Office Action states,

“...the only limitation drawn to “speculative” data mirroring or write operations is found in the first line of the preamble, as such is not given patentable weight due to the lack of correspondence between the preamble recitation and any limitation found in the claim body. Furthermore, paragraph [020], lines 8-9 recites that “...Shoens does not disclose a method that allows multiple concurrent writes or that allows prospective writes prior to the granting of a write lock”. As noted above, prospective writes had not been claimed by claim 1.”

[019] Applicants respectfully ask that the Examiner reconsider these statements. First, Claim 1 recites prospective writes in the body of the Claim. Claim 1 states that “the mirror control module further configured to send write data corresponding to the at least one write operation to the target volume without waiting for feedback regarding the synchronous operation on the target volume...” Sending data to the target volume without knowing whether the lock has been obtained is the essence of a prospective write. The synchronous operation as defined in *Burton* ¶18 may be a lock operation. The Office Action Response states that a prospective write is “sending data related to a write operation to a target volume without receiving a lock for the

target region of the target volume.” The Office Action uses the term “prospective write” to clearly identify the limitation in the third element of Claim 1. Although the specification does not use the term “prospective write,” the specification does describe the sending data to the target volume prior to obtaining a lock on the target region. This is clearly explained and supported under the §112 argument above.

[020] Applicants submit that *Shoens* does not teach “send[ing] write data corresponding to the at least one write operation to the target volume without waiting for feedback regarding the synchronous operation on the target volume, wherein the synchronous operation must complete prior to writing the write data to the target volume.” Applicants submit that the amendments made in the last Office Action Response are fully supported by the specification and that based on the arguments previously made along with the clarifying points here offered, the independent claims are non-obvious over *Shoens*.

CONCLUSION

[021] In view of the foregoing, Applicants submit that the application is in condition for allowance. In the event any questions or issues remain that can be resolved with a phone call, Applicants respectfully request that the Examiner initiate a telephone conference with the undersigned.

Respectfully submitted,

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